

## REMARKS

### The Prior Art Rejections

Several prior art rejections are outstanding. As previously argued with respect to the repeated prior art rejections, which argument is also equally applicable to the new rejection over Hall, none of the prior art references teach an embodiment where a cold pressure weld is used. A cold pressure weld contrary to the allegations is not merely a process limitation that holds no weight in a product claim. As argued previously, a cold pressure weld leads to improved properties in the products formed over the products of the references. A cold pressure weld leads to structural differences in the bond of the product itself, and thus, the product itself prepared by a cold pressure weld is different than a product that is bonded together by other means, such as, for example, sintering as in Ahn, filling a hole with a hot ceramic which expand upon cooling as in Wainer, the use of a paste or hot solder as in the Tukude reference, the placement of a diode into a hole as in Myers, or melting and fusing as in Hall.

Attached to this Reply are three references from the internet, each identified by source.

The first reference comes from a page of a British manufacturer of cold pressure welding equipment, PWM (Pressure Welding Machines) Limited, and is an article titled "Cold Pressure Welding." This article describes a pressure weld to be a bond wherein the bond can be described as a 'cloud' of free negatively charged electrons, enveloping ionised positively charged atoms into a unit as a result of attractive forces, so, if two metallic surfaces are brought together with a space of only a few angstroms separation and there are 300 million angstroms to 1 centimetre, interaction between the free electrons and ionised atoms can occur, this will eliminate the potential barrier allowing the electron cloud to become common. This now affects a bond and therefore a weld.

See page 1, paragraph 9. The reference also discussed the properties of a cold pressure weld as it compares to other types of welds.

"All the usual methods of joining these two materials together, resistance welding, friction welding or flame brazing, all result in a rapid breakdown of the joint, this breakdown or reaction in a copper/aluminium joint begins to take place as soon as the two metals are placed together. The problem is the oxides and the air space left between the interfaces during these methods of welding, not the dissimilarity between the metals themselves. However, with

cold pressure welding these oxides and air spaces are squeezed out in the weld process and since no heat is applied only the metallurgical changes that operate at ambient temperatures occur.

See page 2, paragraph 4 (partial paragraph at beginning of page not counted).

The second reference comes from a page of Huestis Industrial and is directed primarily to the sales of cold pressure welders, where the first paragraph is directed to describing pressure welding and its properties. The paragraph states that the

cold welder produces a weld that is stronger than the parent material without sacrificing electrical integrity.

The third reference comes from a page of Ball Burnishing Machine Tools Ltd., said page is titled TribTech, and is directed to one of their products called Trib-Gel. Trib Gel is a material that promotes cold pressure welding between materials. See page 1, paragraph 1. The reference teaches that

Trib-Joints are made with Trib-Gel™ -a cold welding agent -that promotes cold pressure welding between rubbed metal surfaces. Trib-Joints are distributed asperity cold welds; they are not friction welds or adhesive bonds. Trib-Joints can quadruple the strength of press-fit friction join.

During rubbing in the presence of Trib-Gel, deforming asperities on the surfaces of the parent metals are momentarily softened by chemical action and flow and intermix. When deformation stops they recover and stiffen instantly. This results in many small welds distributed across the rubbed overlap area. There is no cure involved or cooling time.

As the surfaces on press-fit parts rub when pressed one into the other, new welds progressively form and shear under compression, some reform, others become strong mechanical interlocks between the disrupted surfaces. Both couplings resist shear.

See page 1, paragraphs 2-4.

Each of the references clearly teaches that a cold pressure weld leads to a product that is different than other type of welds. Thus, a cold pressure weld leads to a structural feature in the product itself, and thus, is not merely a process limitation that can be ignored in a product claim.

Thus, the claimed product is patentable over the prior art.